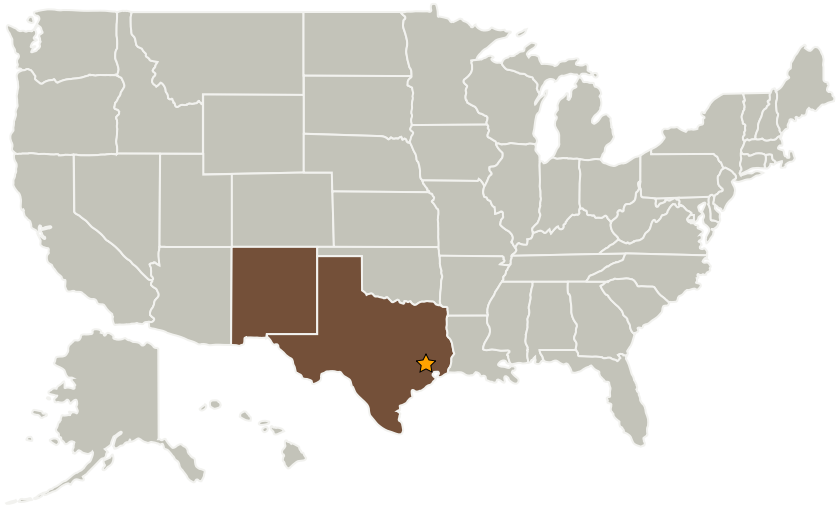
SmartTopo Intelligent Real-Time Topographic Information Collection System, Phase II

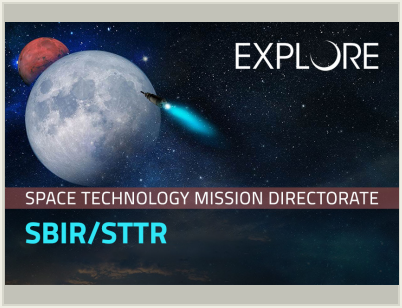
Completed Technology Project (2004 - 2006)

Project Introduction

The SmartTopo SBIR phase I program resulted in the creation of the first technology designed to provide robotic vehicles with the ability to "learn and remember" the terrain over which they travel. The SmartTopo software system is designed to be portable and robust so that it can be used by NASA in a variety of general and embedded applications. It will be used in robotic inspection of spacecraft on-orbit, making re-entry safer for manned spacecraft. It will also improve the safety of air travel by producing a new type of aircraft altimeter which will tell the pilot the true position of the aircraft above the ground. A vehicle (aircraft, spacecraft, satellite, planetary rover or submersible) is sent forth with an internal digital map of the topography of an area to explore. As exploration proceeds sensors (video cameras for example) on the explorer will collect data as always, but now the SmartTopo software will process the data and update the original digital map data in real time, resulting in a higher resolution topographic model of the surface that it has surveyed. RIS has developed and demonstrated the key elements of this technology during Phase I.

Primary U.S. Work Locations and Key Partners





SmartTopo Intelligent Real-Time Topographic Information Collection System, Phase II

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

SmartTopo Intelligent Real-Time Topographic Information Collection System, Phase II

Completed Technology Project (2004 - 2006)

Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Rapid Imaging Software, Inc.	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Albuquerque, New Mexico

Primary U.S. Work Locations	
New Mexico	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX10 Autonomous Systems
  - TX10.1 Situational and Self Awareness
    - TX10.1.3 Knowledge and Model Building